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DESCRIPTION OF A NEW WHITE-FOOTED MOUSE FROM THE EASTERN UNITED STATES.

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A critical study of over five hundred specimens of Sitomys collected in the northeastern United States and adjoining British provinces leads me to the conclusion that two distinct though somewhat closely related animals are at present confused under the name of *Sitomys americanus*. The two forms may be distinguished by the following diagnoses:

Ratio of tail vertebræ to total length ranging from 40 to 47.9; pencil, 2 mm. to 5 mm.; tail often not sharply bicolor; young usually passing directly from the plumbeous first coat to the russet-brown pelage of the adult, which is thus present in the great majority of specimens. . . . . *americanus*.

Ratio of tail vertebræ to total length ranging from 46.5 to 53.6; pencil, 4.4 mm. to 11 mm.; tail always sharply bicolor; young always passing through a gray phase between the plumbeous first coat and dull yellowish brown pelage of adult, which is thus comparatively seldom met with. . . . *canadensis*.

Sitomys americanus canadensis subsp. nov.

Hesperomys myoides Baird. Mam. N. Am., 1857, 472 (probably in part only), not *Cricetus myoides* Gapper.

Subsp. Ch. Somewhat larger than *Sitomys americanus* (Kerr), with longer, more hairy tail, and duller, less russet coloration;

young always passing through a gray phase before assuming the fulvous pelage; tail always sharply bicolor.

Adult (♀ No. $\frac{16}{140}\frac{12}{9}$, collection of G. S. Miller, Jr., Peterboro, Madison county, N. Y., July 24, 1892); length, 200*; tail vertebræ, 100; pencil, 6.6; hind foot, 21.4; ear from notch, 19; ratio of tail vertebræ to total length, 50. Fur everywhere except on lips and chin, slaty plumbeous at base. Dorsal surface wood-brown, slightly tinged with yellow, and very sparsely sprinkled with blackish hairs, which form a faint, ill-defined dorsal stripe; area between ears somewhat grayer; ears thinly clothed with whitish hairs internally, externally with brown; a whitish tuft at anterior base of ear; whiskers reaching about to shoulders, mixed blackish and silvery; tail sharply bicolor, white ventrally and at extreme tip, Vandyke brown above; dorsum of manus and pes, together with whole ventral surface, soiled white.

Young in gray phase (♀ No. $\frac{16}{143}\frac{38}{5}$, collection of G. S. Miller, Jr., Peterboro, Madison county, N. Y., August 1, 1892); length, 201; tail vertebræ, 105; pencil, 11; hind foot, 21; ear from notch, 17.8; ratio of tail vertebræ to total length, 52.2; contained three embryos. Color of dorsal surface intermediate between broccoli-brown and smoke gray, with a slight admixture of blackish hairs as in adult, and a very faint trace of a narrow yellowish line bordering white of belly; a clear smoke-gray area between ears; otherwise colored like adult, except that the dorsal stripe on the tail is somewhat darker.

On comparing over one hundred specimens of *Sitomys americanus canadensis* with about four hundred skins of *S. americanus* the longer, more hairy tails and, as a whole, grayer color of the former are very noticeable. Three "stages of development" may conveniently be recognized in these mammals: first, the plumbeous young; second, fully grown and sexually mature individuals with the teeth still unworn, and, third, old animals with worn teeth. In the first stage there is nothing to distinguish the two subspecies except the longer, more hairy tail of *S. canadensis*. Specimens in the second stage differ most markedly, as *S. canadensis* is now gray, while *S. americanus* has, for the most part, assumed the russet coat. In the third stage again the two forms resemble each other somewhat closely, since both are now in the fulvous pelage; *canadensis*, however, may always be distinguished from its smaller relative by its longer, more hairy, and

* All measurements are in millimeters, unless otherwise specified.

more sharply bicolored tail and paler, grayish yellow color, without trace of the russet usually seen in *americanus*, and much less distinct dorsal stripe.

The differences in color characterizing these two animals are rather difficult to describe, but nevertheless they are of such a kind as to appeal immediately to the eye, especially when specimens in the flesh are examined. In many adults of *S. canadensis* the color of the dorsal surface is nearly homogeneous yellowish-brown or grayish-brown throughout, with merely the faintest possible trace of darkening in the mid-dorsal region. There is usually an indication of a very narrow yellowish line separating the color of the sides from the white of the belly. This is apt to be more distinct in the region of the cheeks and neck. The white ventral surface has frequently a soiled yellowish cast, which is oftenest met with in mid-summer. The pencil is usually white, and this color frequently involves the whole tip of the tail, sometimes for a distance of 30 mm., a feature very rarely seen in the shorter-tailed *S. americanus*. Grayish examples of *americanus* are sometimes met with among specimens taken in the summer, but with the exception of these very few of the smaller race approach in color even the brightest individuals of *S. canadensis*. In the gray phase *Sitomys americanus canadensis* bears a somewhat close resemblance to *S. americanus arcticus* (Mearns), the type of which in the Museum of Comparative Zoölogy at Cambridge, Mass., I have examined. The former may, however, be at once distinguished by its much longer tail, proportionally longer than in *americanus*, instead of proportionally somewhat shorter, as is the case with *arcticus*.

So far as I can see, *Sitomys americanus canadensis* shows no cranial or dental characters to separate it from its near allies.

As in all members of the genus, there is here considerable variation in actual size as well as in proportions. This variation for each form (*americanus* and *canadensis*) proves to be much less than recent writers have generally accredited to "*Hesperomys leucopus*." Both Allen (Bull. M. C. Z., 1, 1869, 227, 228) and Coues (Monog. N. Am. Rod., 1877, 53) allow a large range of variability in the ratio of tail vertebræ to total length. Nevertheless, this character proves to be sufficiently constant to be of considerable diagnostic value. Mr. Allen says (l. c., pp. 227–228): "But the most variable character consists in the relative length * * * of the caudal vertebræ. About one-fifth of the Massachusetts

specimens (of "*H. leucopus*") have the tail vertebræ equal to or longer than the head and body. * * * At least four-fifths, however, have the tail shorter than the head and body, and occasionally one occurs with the tail only equal to the body alone. In these latter the proportional length of the tail vertebræ to the length of the head and body is as 68 to 100; in the other extreme, or in those with long tails, as 118 to 100. The variation between these extremes is hence fifty per cent. of the mean—a striking example of the unreliability of this character as a specific distinction. * * *"

Dr. Coues repeats Mr. Allen's observations, adding: "The variation in absolute and relative length of the tail is greater than in any other dimension. * * * But this ceases to be remarkable when we recollect that it is purely a matter of what has been aptly called 'vegetative repetition.' It seems to be a well-nigh universal law that those parts or organs that are least specialized—*i. e.*, those of which several have the same or corresponding character and function—are liable to be produced with a high degree of irregularity as regard their number, and the more such there are the wider are the limits of variation apt to be. In this species, one of our longest-tailed rodents, the law is perfectly illustrated."

A glance at the appended tables of measurements and ratios of two hundred and fifty white-footed mice from the eastern United States and adjoining British provinces will show the incorrectness of the views quoted above. The range of variation in ratio of tail vertebræ to total length is in *S. americanus* from about 40 to about 48, while in the longer-tailed *S. a. canadensis* the variation is from 47.4 to 54.2. That Dr. Coues and Mr. Allen should have fallen into this error is probably due to the fact that their measurements were taken in part from distorted skins or alcoholic specimens, and also to the confusion of the two races under one name. The measurements here tabulated were all taken from the fresh specimens before skinning, and, unless otherwise stated, the writer is responsible for their accuracy.

So many names have been proposed for white-footed mice from eastern North America that it may appear somewhat hazardous to institute still another; hence the species described by authors from the region of importance in the present connection may well be considered here in some detail.

The first is, of course, the *Mus agrarius americanus* Kerr (An. Kingd., I, 1792, 231, based on Pennant, History of Quadrupeds, "No. 302B").* The description given by Pennant makes special reference to the mixed "dusky and ferruginous" color of the back and "orange coloured" sides of his American Field Rat, terms which refer unequivocally to our smaller and better-known animal. Any doubt in the case is dispelled by the addition by Pennant in the Arctic Zoölogy (I, 1784, 131), "length, about four and a half inches; of tail, four inches;" thus showing that it was the short-tailed form that he had in mind.

On Pennant's animal was based also the *Mus sylvaticus noreboracensis* of Fischer (Synopsis Mammalium, 1829, 318), the habitat of which is given as "in Novo Eboraco," and in all probability the *Mus noreboracensis* of Selys Longchamps (Etudes d'-Micromammalogie, 1839, 67), since this author remarks that the animal is a good species, although considered merely a variety by previous writers. That it is clearly the short-tailed animal that Selys Longchamps refers to is shown by the following extracts from the original description: "Son pelage est d'un fauve plus vif sur les côtes de la tête et du corps. * * * Longeur totale, 6 pouces 2 lignes; du corps, 3 pouces 6 lignes; de la queue, 2 pouces 8 lignes." This mouse is said to replace in North America the European *Mus sylvaticus*.

Rafinesque's *Musculus leucopus* (American Monthly Magazine, III, 1818, 446) is named among the ten new species of "wild rats" met with by that prolific describer of species during "a journey through the western region of the United States"—that is, in the Ohio valley and the pine barrens of Kentucky. As there is little chance that the range of *Sitomys canadensis* extends to that region, the name is hardly worth considering here. It may be mentioned, however, that Rafinesque's animal is said to be "fallow above," an expression which might apply fairly well to *S. americanus*, though hardly to the larger form.

The next name to be considered is the *Cricetus myoides* of Gapper (Zoölog. Journ., V, 1830, 204, pl. x). This animal, from the region between York and Lake Simcoe, Canada, is described as having the "upper half of the body mixed black and light reddish or yellowish brown." It is further stated that "it measures 3¾ inches from the tip of the nose to the insertion of the tail; the

*Synopsis of Quadrupeds, 1771, p. 303, No. 320A (American Field Mouse). History of Quadrupeds, II, 1781, p. 444, No. 302A.

tail itself, 3¼ inches." Thus color and measurements alike refer to *S. americanus*. Moreover, two white-footed mice kindly sent me in the flesh by Mr. I. R. Bourchier, of Sutton, West Ontario, Canada, just south of Lake Simcoe, are perfectly typical of the smaller form.

Arvicola emmonsii De Kay, from Massachusetts (in Emmons' Report on the Quadrupeds of Massachusetts) is clearly a synonym of *americanus*. The color is given as simply "brown above, darker along the back than the sides," but the whole length is stated to be 6 inches; tail, 2.5 inches. This animal is said to inhabit "*meadows* and wooded places. It is often seen in *fields recently mowed*, and is known by the name of Deer Mouse" (italics mine). *Sitomys americanus canadensis* never occurs in fields and meadows, where, however, *S. americanus* is often found.

Wagner's *Hesperomys maniculatus* (Wiegmann's Archiv., XI, 1845, Bd. I, 148*), from the Moravian settlements in Labrador, is described as "supra fuliginoso brunneus * * * Körper 3″ 2‴, Schwanz 2″ 5‴." In Beiträge zur Kentniss der Säugthiere Amerikas (Abhandl. Ak. Wiss. Wien, 1848, 315, 316) the author gives practically the same diagnosis, followed by the remarks: "Gestalt, Grösse und Farbenvertheilung verhält sich wie bei *H. leucopus*, so dass ich nur die Differenzen anzugeben brauche, welche sich zwischen ihr und dem letztern, von dem ich dermalen nur Beschreibungen, und zwar zunächst die Richardson's vergleichen kann, ergeben. Diese Abweichungen bestehen darin, dass bei *H. maniculatus* die Oberseite weit trüber gefärbt ist, indem sie namlich blos russig gelblichbraun und schwarz gesprenkelt ist, ohne Beimischung von Rostroth vie es von *H. leucopus* angegeben wird." This description is somewhat puzzling, and without specimens from the coast of Labrador it is impossible to decide just what animal it refers to. That *S. canadensis* is not Wagner's animal is shown by the measurements, which being taken from "2 Weingeist Examplaren" must be fairly accurate.

Hesperomys campestris Le Conte, from New Jersey, is described so vaguely (Proc. Ac. Nat. Sci. Phila., VI, 1853, 413) that, to use Professor Baird's words (Mam. N. Am., 1857, 485): "Of the affinities of this animal I will hazard no conjecture." That it is not the same as *S. canadensis* is shown by the measurements—length,

*Not "1843, II, 141, and 1845, II, 148," as given by Baird and Coues.

3.4 inches; tail, 2.7"—which were taken from an alcoholic specimen.

The next name to be examined is the *Hesperomys gracilis* of Le Conte (Proc. Acad. Nat. Sci. Phila., VII, 1855, 442). Le Conte states that the animal "inhabits Michigan; Professor Baird." From the description, "dark slate color above, a little tipped with brown," it seems probable that the type specimen was immature. There are some discrepancies between the measurements given in the original description and those of the same specimen given by Baird (Mam. N. Am., 1857, 473). According to Le Conte, the length (head and body) is 3.8 inches; tail, 4, while Baird gives the dimensions of the same parts as 3.60 and 3.70 inches respectively. The latter author adds that the body is stretched. The long tail of this specimen might suggest the possibility of its being the same as my *canadensis*, but on account of its poor condition and the vagueness of the description, it seems wisest to discard the name entirely as undeterminable. Moreover, Baird states that the pencil of the type is 0.10 in. (2.5 mm.) in length, which is much less than in any specimens of *S. canadensis* that I have seen.

While not wishing to enter here into a general discussion of the relationships of *Mus michiganensis* Aud. and Bach., and *Mus bairdii* Hoy and Kennicott, a few words concerning the probable bearing of these animals on the present case may not be out of place. *Mus michiganensis*, from Erie county, Michigan, is described (Journ. Acad. Nat. Sci. Phila, VIII, pt. II, 1842, 304) as a "mouse with yellow cheeks, a light grayish-brown color above, whitish below. * * * The feet, nails, ears, and tail are light brown." It is farther remarked that "there is no distinct line of demarkation between the colors of the back and under surface, nor does the white extend along the sides as in the white-footed mouse. Dimensions: length of head and body, 4 inches 0 lines; length of tail, 2 inches 6 lines." That this animal cannot be the same as *S. canadensis* is shown by the short tail and peculiar coloring of the feet and sides.

The description of *Mus bairdii* (Rep. Com. Patents for the year 1856, published in 1857, p. 92) from northern Illinois and southern Wisconsin refers to some short-tailed, bright-colored mouse quite unlike *Sitomys a. canadensis*, as the following extracts will show: "Length of the adult male, from nose to root of tail, $2\frac{3}{4}$ inches; tail (vertebræ), $1\frac{3}{4}$ inches; hind foot, $\frac{3}{4}$ of an inch. Head

and body of a large male, $3\frac{3}{4}$ inches; tail, 2 inches. In another specimen, the head and body $3\frac{3}{16}$ inches; tail, $1\frac{3}{4}$ inches. In spring the hairs of the upper parts are plumbeous at the base, tipped with ashy and yellowish brown; a few longer hairs, entirely black, interspersed. The tips of most of the hairs deepen into black along the back, giving a broad, black stripe when the hair lies flat. In some specimens this stripe is not so dark as in others, but is quite distinct in all, while in some it is pitch-black." It will be remembered that one of the noticeable color features of *S. canadensis* is the indistinctness of the dark dorsal stripe; hence *Mus bairdii*, whatever it really may be, is a very different species.

The animal from Burlington, Vermont, described by Baird under the name of *Hesperomys myoides* (Gapper) (Mam. N. Am., 1857, p. 472), is, in part at least, the same as the subject of the present paper. Baird remarks that "all the white-footed mice from near Burlington, Vermont, had much longer tails in proportion than those from Middleboro, Massachusetts." The only specimens, three in number, that I have seen from the locality in question are, however, typical *americanus*. Baird's statement, "tail vertebrae generally .25 of an inch longer than head, and body with a decided pencil at the end," and also table of measurements on page 473, refer, without question, to the long tailed form; but his description leaves a slight doubt as to just what animal he had in hand. I have never seen a specimen of *S. canadensis* in which the color is "more vivid yellowish brown" than in *S. americanus*, nor do any resemble *S. aureolus* in color, as is said to be the case with "*H. myoides*." Baird considered the presence of cheek pouches to be the best diagnostic character of *myoides*. More recently, however, it has been shown by Allen (Bull. M. C. Z., I, 1869, 229) that these structures occur also in the common *S. americanus*. It is worthy of remark, in this connection, that I have found the cheek pouches of *S. canadensis* much the more frequently and conspicuously distended with food.

Sitomys americanus canadensis is exclusively a Canadian form, replacing *S. americanus* in the spruce forests of New Brunswick (Restigouche county, E. A. Bangs; Northumberland county, G. S. Miller), and extending south among the hills and mountains at least to central New York and western Massachusetts. *Sitomys americanus* is found as far north as Digby, Nova Scotia, and Lake Simcoe, Ontario. Thus the ranges of the two forms overlap

geographically about two hundred miles. Nevertheless, the conditions under which the animals live are essentially different, *S. canadensis* confining itself to dense, preferably damp woods—such as *Troglodytes hiemalis* and *Certhia familiaris americana* choose to breed in—while *S. americanus* is a mouse of the open fields, clearings, and neighborhood of houses. Only in the central and southern part of its range, where the character of the country is very different from that inhabited by *S. canadensis*, does the smaller animal take to the woods with anything like regularity. I have no doubt that the northward range of *S. americanus* has been considerably extended by a gradual movement, following the clearing away of the forests, thus bringing the two races into their now curiously close juxtaposition.

For the present at least I have thought it best to treat these two animals as subspecies. It must be confessed, however, that the number of intermediates is surprisingly small, less than a dozen in the total number of specimens examined, and that these occur in no particular geographical region. The case is susceptible of no definite proof until more facts are forthcoming; meanwhile it lies with each observer to treat these closely allied forms as his individual preference may dictate.

Measurements of One Hundred and Fifty Specimens of Sitomys americanus (Kerr).

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
2011	1763	Sutton, West Ontario, Canada.	Nov. 25, '92	♀	167	74	3.8	21.6	17	44 3
2012	1764	" "	Dec. 1, '92	♀	160	70	3.6	20	15.4	43.7
2231	.....	Digby, N. S.....	Oct. 9, '92	♂	166.5	80.5	3.4	20.5	17.5	47.7*
2232	.....	" "	" 9, '92	♂	164	78	2.8	20.5	16	47.5
2233	.....	" "	" 11, '92	♀	172	83	3	19.5	17	48.9
2234	.....	" "	" 13, '92	♀	167.5	82	4	19.5	15.5	48.3
2235	.....	" "	" 13, '92	♀	166.5	79	3.8	20	15	47.4
2236	.....	" "	" 16, '92	♂	163	79	3	19	17.5	48.4
2237	.....	" "	" 16, '92	♀	156.5	72.5	2.4	20	15.5	46.3
2238	.....	" "	" 17, '92	♂	154.5	70.5	3.4	20.5	16	44.9
2239	.....	" "	" 17, '92	♂	156.5	74.5	3	20.5	16	41.2
2240	.....	" "	" 21, '92	♀	157	71	3	19	17	45.2
2241	.....	" "	" 23, '92	♀	166.5	80	3.4	20.5	14.5	48.4
2242	.....	" "	" 23, '92	♂	159	73	2.4	19.5	15.5	45.9
1024	873	Elizabethtown, N. Y.	Dec. 20, '91	♀	169	74	3.6	20.4	17	43.1
1025	874	" "	" 21, '91	♂	165	74	3.4	22	16.8	44.8
1042	890	" "	" 27, '91	♂	170	76	4	20	16.4	44.7
1049	897	" "	" 28, '91	♂	180	79	3.2	19.5	16.2	43.9
1054	902	" "	" 29, '91	♂	167	68	3.2	20.4	16.2	40.7
1055	903	" "	" 30, '91	♂	162	68	3.6	20.4	16.2	41.9
1059	907	" "	" 31, '91	♂	168	74.8	3.6	21	14.8	44
1060	908	" "	" 31, '91	♀	160	71	3.4	20.5	15.4	44.3
1063	911	" "	Jan. 1, '92	♂	168	71	4.4	20	14	42.3
1065	913	" "	" 1, '92	♂	158	66.5	3	20.2	14 8	42.1
1066	914	" "	" 1, '92	♂	158	70	3	20	15.6	44.3
1140	967	" "	" 3, '92	♂	181	83	4.2	21	17	45.8
1141	968	" "	" 3, '92	♂	169	71	3.4	21	17	44.1
1282	1109	" "	Feb. 27, '92	♂	166	74	3.6	21	16	44.6
1292	1112	" "	Mar. 10, '92	♀	154	69	2.8	20.5	15.5	44.8
1352	1169	" "	Apr. 3, '92	♀	163	68	3.2	20	16	41.7
1353	1170	" "	" 4, '92	♀	157	67	3	20	14.8	42.6
1355	1172	" "	" 11, '92	♀	172	71	3.8	19	15.2	41.3
1356	1173	" "	" 4, '92	♂	176	80	4	20	14.5	45.4
1357	1174	" "	" 5, '92	♂	175	76	2.8	19.4	16.8	43.4
258	.....	Peterboro, N. Y.	July 15, '90	♀	175	76	3.6	19.3	14	43.5
1595	1392	" "	" 20, '92	♀	192	86	4.4	21	16	45
1640	1437	" "	Aug. 3, '92	♀	172	76	...	20	16.4	44
1648	1444	" "	" 17, '92	♀	172	76	4	19	17	44
1649	1445	" "	" 17, '92	♂	185	80	4	20.8	18	43
1652	1448	" "	" 19, '92	♀	177	75	2.4	20.2	16.2	42
1653	1449	" "	" 19, '92	♀	164	72	3.4	20.6	16	44
1654	1450	" "	" 20, '92	♀	170	76	1.8	20.4	16	45
1683	1478	" "	Sept. 9, '92	♀	190	85	4.4	22	18	45
1708	1499	" "	" 17, '92	♀	155	69	2	19	17	45
1709	1500	" "	" 17, '92	♀	156	71	2	20	16	45
1710	1501	" "	" 17, '92	♂	167	76	3.4	20	17	46
1716	1507	" "	" 25, '92	♂	152	66	3.4	19.8	14.4	43.4

*Collected and measured by Outram Bangs.

Measurements of One Hundred and Fifty Specimens of Sitomys americanus (Kerr).

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
1097	1760	Peterboro, N. Y.	Nov. 9, '92	♂	168	75	3	22	16	44.6
283	.....	Geneva, N. Y....	Dec. 25, '90	♀	165	71	3.4	20.4	17	43
284	.....	" "	" 27, '90	♀	165	72.5	3.8	19	16	43.3
1153	980	West Dedham, Mass.	Jan. 30, '92	♂	184	82	3	20.4	14.5	43.5
1154	981	" "	" 30, '92	♂	178	78	3.2	20.8	15	43.8
1155	982	" "	" 30, '92	♂	163	69.6	3.2	20.5	16	42.7
1156	983	" "	" 30, '92	♂	169	72	3.2	21	15.8	42.6
1157	984	" "	" 30, '92	♂	183	82	4	20	16	44.8
1158	985	" "	" 30, '92	♂	165	70	3	21	15.8	42.4
1159	986	" "	" 30, '92	♂	179	78	3.4	21	14.8	43.6
1160	987	" "	" 30, '92	♀	172	79	4	21	15.2	45.9
1161	988	" "	" 30, '92	♀	165	72.5	4	20.5	15	43.9
1162	989	" "	" 30, '92	♀	179	78.5	3.4	23	16.5	43.9
1163	990	" "	" 30, '92	♀	173	76	5	20.2	17	43.9
1164	991	" "	" 31, '92	♂	162	69	3.4	20.5	14.8	42.5
1165	992	" "	" 31, '92	♂	167	76	3.6	20	15.4	45.5
1166	993	" "	" 31, '92	♀	163.5	72	3.2	19	13.5	44.3
1167	994	" "	" 31, '92	♀	163	72	4	21	17	44.1
1168	995	" "	" 31, '92	♀	163	70	3.8	20	14.8	42.9
1402	1218	" "	May 8, '92	♀	182	81	2.4	20	16	44.5
1173	1000	" "	" 1, '92	♂	171	74	3.4	20.5	15	43.2
1174	1001	" "	" 1, '92	♀	159	66	3.2	21.4	16.4	41.5
1175	1002	" "	" 1, '92	♀	174	77	5	20.2	15	44.2
1402	1218	" "	" 8, '92	♀	182	81	2.4	20	16	44.5
448	372	Seekonk, Mass...	April 6, '91	♀	195	88.5	3.4	20.8	17.2	45.4
919	805	" " ...	Nov. 28, '91	♂	179	79	4.6	21	14.8	44.1
920	806	" " ...	" 28, '91	♂	152	66	....	20.4	14.8	43.4
922	808	" " ...	" 29, '91	♂	167	87	3.4	20.2	15	46.7
923	809	" " ...	" 29, '91	♂	162	67.4	3.8	20.4	15	41.6
924	810	" " ...	" 29, '91	♂	184	85.5	2.8	20.8	15.8	46.5
926	812	" " ...	" 27, '91	♀	190	88.5	3 2	20.8	15.6	46.6
927	813	" " ...	" 27, '91	♀	171	76.6	3	20.5	15.6	44.8
928	814	" " ...	" 29, '91	♀	188	84	4.2	20.4	17	44.7
929	815	" " ...	" 29, '91	♀	181	76	4	20.5	15	42
931	817	" " ...	" 29, '91	♀	196	94	3	20.6	15.4	47.9
932	818	" " ...	" 29, '91	♀	163	75.6	3.6	20.8	16.4	46.4
933	819	" " ...	" 29, '91	♀	180	79	3.6	19.8	14.4	43.9
936	822	" " ...	" 30, '91	♀	178	75.5	3.2	19.8	15.8	42.4
2014	.....	" " ...	Dec. 12, '92	♀	193	86	4.2	20	16	44.6
2289	.....	Concord, Mass ...	Nov. 5, '92	♂	159	69	4	20	15	43.4
2290	.....	" " ...	" 5, '92	♂	158	69	3	20.4	15	43.6
1399	1215	Weston, Mass....	May 2, '92	♂	170	72	3	20.8	17	42.3
1400	1216	" "	" 2, '92	♂	180	79	2.8	20.8	16.8	43.9
1401	1217	" "	" 2, '92	♂	166	68	2.6	20	17	41
436	357	Ipswich, Mass ...	Mar. 21, '91	♂	176	82.5	3	20.5	16	46.9
437	358	" " ...	" 21, '91	♂	162	75	2.6	20	15.8	46.3
439	360	North Truro, Mass.	April 1, '91	♀	188	83.5	3	19.5	16.2	44.4
440	361	" "	" 1, '91	♀	156	66	3	19.5	17	42.3

Measurements of One Hundred and Fifty Specimens of Sitomys americanus (Kerr).

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
441	362	North Truro, Mass.	April 1, '91	♂	152	65	4	20	16	42.1
442	363	" "	" 1, '91	♂	148	67	3.2	20	16.4	45.3
443	364	" "	" 1, '91	♂	153	65.5	3	19.5	16	42.1
444	365	" "	" 1, '91	♂	156	68	3.6	20	14.5	43.6
451	366	" "	" 1, '91	♂	164	69	....	20	16	42.1
749	642	" "	Sept. 22, '91	♂	169	78	2.6	21	16.8	46.1
1422	1234	" "	May 22, '92	♂	182	85	....	21	17	46.7
1525	1331	" "	June 24, '92	♂	183	82	3	20.2	16.2	44.8
1527	1333	" "	" 24, '92	♂	167	74	....	20	17	44.3
1529	1335	" "	" 25, '92	♂	188	83	2.4	20	16	44.1
1530	1336	" "	" 28, '92	♂	175	80	2.4	21	15.4	46
1531	1337	" "	" 28, '92	♂	180	79	2.4	20	16.8	44
1	.....	Liberty Hill, Conn.	Nov. 21, '92	♂	178.5	78	3.8	20	17.5	43.2*
3	.....	" "	" 22, '92	♂	145	57.5	3	20	14	40
4	.....	" "	" 22, '92	♂	173.5	74.5	4	20.5	15	42.9
5	.....	" "	" 22, '92	♂	164.5	70	3.8	20.5	15	41.9
7	.....	" "	" 23, '92	♂	158	71	3	20.5	14.5	44.2
9	.....	" "	" 26, '92	♀	171	77	5.2	21.5	19	45
10	.....	" "	" 26, '92	♀	167.5	78.5	3.8	20	18	46.9
13	.....	" "	" 26, '92	♀	151	69	4	19	18	45.6
14	.....	" "	" 26, '92	♂	146	66	3.2	20	18	45.2
15	.....	" "	" 26, '92	♂	142	61	3.6	18	15	43
16	.....	" "	" 26, '92	♂	166.5	74.5	3.4	19	17	44.7
17	.....	" "	" 26, '92	♀	151	65	4.2	20	17	43
18	.....	" "	" 26, '92	♀	165	75	3.8	19	15	45.4
19	.....	" "	" 26, '92	♀	158	69	3.4	18	15	43.6
20	.....	" "	" 26, '92	♀	164	74	3.4	19.5	17.5	45.5
1	.....	" "	Dec. 14, '92	♀	175	80	3.4	20.5	17	45.7
1	.....	" "	" 15, '92	♀	173	73	3.8	21	15.5	42.2
13	.....	Haddonfield, N. J.	" 24, '91	♀	169	73	5	21.3	15.2	41.6†
15	.....	" "	" 24, '91	♀	165	74.7	3	19.3	16.3	45.3
18	.....	" "	" 24, '91	♂	141	62	3	19.3	15.7	44
30	.....	" "	" 26, '91	♂	152	66.5	4	20.3	16.3	43.7
32	.....	" "	" 26, '91	♂	143	63.5	3.6	19	14.7	43.7
38	.....	" "	" 27, '91	♂	155.4	71.6	3.2	20.3	17.5	46.1
51	.....	" "	" 28, '91	♂	156	66	3.6	19.3	15.7	42.3
57	.....	" "	Jan. 11, '92	♂	153	64	4	21.6	17	41.8
88	.....	" "	" 22, '92	♂	174	82	4.2	20.3	15.7	47.1
90	.....	" "	" 23, '92	♂	159	69.8	4.2	19.6	16	43.9
118	.....	" "	Feb. 2, '92	♀	171	74.2	3.8	23	17	43.4
125	.....	" "	" 3, '92	♀	152	67.3	4	21.3	16.5	44.3
146	.....	" "	" 13, '92	♀	165	73	4	20	16	44.2
152	.....	Thorndale, Pa....	" 18, '92	♂	157	67	3.6	21	10	42.6
134	.....	Barren Ridge, Pa.	" 7, '92	♂	161	67	3.4	21	15.2	40.3
135	.....	" "	" 7, '92	♂	149	58	4	20.3	15.7	39.6
58	.....	Marple, Pa.....	Jan. 13, '92	♂	152	63	3.8	21	16	41.4
61	.....	" "	" 14, '92	♂	157	67	4	20.3	15.2	42.6
71	.....	" "	" 15, '92	♂	140	57	2.4	20.3	16.8	40.7

*Collection of Outram Bangs; measured by collector.
†Collection of S. N. Rhoads; measured by collector.

Measurements of One Hundred and Fifty Specimens of Sitomys americanus (Kerr).

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
74	.....	Marple, Pa.....	Jan. 16, '92	♂	154	63	3	20.3	16	41
75	.....	" "	" 16, '92	♂	156	69	3.8	22	15.2	44.3
2132	1862	Washington, D. C.	Feb. 12, '93	♂♀	194	91	2	21	17	46.9
2133	1863	" "	" 12, '93	♂♀	185	85	2.8	20	15	45.9
2134	1864	" "	" 12, '93	♂	165	76	3.6	21	16	46.6
2135	1865	" "	" 12, '93	♂	177	84	3.4	20	16	47.4
2136	1866	" "	" 12, '93	♂	165	72	3	21	16	43.6

Measurements of One Hundred Specimens of Sitomys americanus canadensis Miller.

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
1436	.....	Northumberland Co., N. B.	June 6, '92	♂	170	83	....	19.8	16.8	48.8
1437	.....	" "	" 9, '92	♀	150	73	....	19.8	16	48.7
1419	1231	Oak Bay, N. B....	Apr. 11, '92	♂♀	155	75	5	19.8	15.6	48.4*
1848	1626	" "	May 18, '92	♀	185	90	6	20	16	48.6
1032	881	Elizabethtown, N. Y.	Dec. 23, '91	♂♀	181	91	7.4	20.2	17.8	50.3
1033	882	" "	" 23, '91	♀	197	100.5	8	20	17.4	51
1034	883	" "	" 23, '91	♂♀	170	84	6.8	19.4	16	49.4
1043	891	" "	" 27, '91	♂♀	165	82	5.6	18	17	49.7
1044	892	" "	" 27, '91	♀	165	86	6.8	20	17	52.1
1048	896	" "	" 28, '91	♂♀	178	89	7.4	20	16.8	50
1056	904	" "	" 30, '91	♂♀	196	100	7.8	20	17.2	51
1061	909	" "	" 31, '91	♀	184	91	6.8	20	16.5	49.5
1062	910	" "	" 31, '91	♂♀	166	81	6.6	19.8	17.6	48.8
1067	915	" "	Jan. 1, '93	♂	173	85	5.4	20	18.2	49.1
1142	969	" "	" 3, '93	♂♀	171	81	5.4	20.5	18	47.4
1143	970	" "	" 3, '93	♀	176	84	6	20	16.5	47.7
1181	1008	" "	Feb. 4, '93	♂	189	95	6.6	21	16	50.3
1208	1035	" "	" 17, '93	♂	170	83	4.4	21.5	15	49
1209	1036	" "	" 17, '93	♂♀	162	81	4.4	21.5	14	50
1223	1050	" "	" 19, '93	♂	185	92	4.6	21.5	15	49.7
1224	1051	" "	" 19, '93	♂	181	90	5.8	21.2	16	49.7
1284	1104	" "	" 21, '93	♂♀	168	85	4.6	22	17	50.6
1286	1106	" "	" 25, '93	♂	173	89.5	6.2	20	17	51.7
1287	1107	" "	" 25, '93	♂	170	85	6.4	19.5	16	50
1288	1108	" "	" 25, '93	♂	169	81	5	22	18	47.9

* Collected and measured by H. H. McAdam.

Measurements of One Hundred Specimens of Sitomys americanus canadensis Miller.

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
1365	1181	Elizabeth t o w n, N. Y.	Mar. 28, '93	♀	160	80	4.8	19	18.5	50
1368	1184	" "	April 6, '93	♀	173	83	7.8	20.4	17	47.9
1369	1185	" "	" 6, '93	♂	186	88.5	6.4	20.4	17	47.6
1370	1186	" "	" 9, '93	♂	172	85	6	21	17.2	49.4
1371	1187	" "	" 4, '93	♂	179	86	7.4	20	17	48
1372	1188	" "	" 4, '93	♂	185	93	7.2	19.4	18	50.2
1373	1189	" "	" 6, '93	♂	187	90	8.2	21	18.2	48.1
1374	1190	" "	" 10, '93	♂	177	85	7.2	21	16.2	48
1375	1191	" "	" 10, '93	♂	181	88.5	7	21.2	19	48.9
1285	1105	" "	Feb. 25, '93	♂	172	85	3.2	20	17	49.8
1361	1178	" "	April 4, '93	♀	182	90	6.6	20.4	18.2	49.5
1362	1179	" "	" 9, '93	♂	193	92.5	7.8	20	16.8	47.9
1573	1370	Peterboro, N. Y.	July 17, '93	♂	172	85	6.8	20	17.6	49
1579	1376	" "	" 18, '93	♂	172	85	5.7	20	18	49
1580	1377	" "	" 18, '93	♂	200	100	6.4	21	18.8	50
1582	1379	" "	" 18, '93	♂	190	97	7.8	21.2	18	51
1583	1380	" "	" 18, '93	♂	182	95	7.4	21.8	17.6	52
1584	1381	" "	" 18, '93	♂	172	84	7	20.6	17	49
1585	1382	" "	" 18, '93	♂	196	102	6	21.4	18	52
1586	1383	" "	" 18, '93	♂	195	101	9	21	19	52
1587	1384	" "	" 18, '93	♂	195	98	7	21	17.2	50
1588	1385	" "	" 19, '93	♂	175	91	6	21	19	52
1589	1386	" "	" 19, '93	♂	196	98	7	21	19.2	50
1590	1387	" "	" 19, '93	♂	176	85	5.2	20.8	18	48.3
1591	1388	" "	" 19, '93	♂	165	84	5.6	20.	18	50.9
1593	1390	" "	" 19, '93	♂	187	92	7.8	21.6	18	49.2
1597	1394	" "	" 20, '93	♂	171	87	6 6	20	18	50.9
1598	1395	" "	" 20, '93	♀	172	87	5.6	19 8	19	50.6
1599	1396	" "	" 20, '93	♂	206	108	7	21.8	18.8	52.4
1600	1397	" "	" 20, '93	♂	188	99	6.6	21.8	16.8	52.7
1601	1398	" "	" 20, '93	♂	175	86.5	6.6	20	18.2	49.4
1602	1399	" "	" 20, '93	♂	185	96	6.8	21.8	19	51.9
1603	1400	" "	" 20, '93	♂	180	89	5.4	21.8	19	49.4
1606	1403	" "	" 21, '93	♂	175	87	7	21	19	49.7
1607	1404	" "	" 21, '93	♂	175	90	6	21	16.6	51.4
1608	1405	" "	" 21, '93	♂	188	94	9	21	18	50*
1610	1407	" "	" 21, '93	♂	179	93	5.4	20	18	51.9
1611	1408	" "	" 21, '93	♂	180	91	6	21.2	19.6	50.4
1612	1409	" "	" 24, '93	♀	200	100	6.6	21.4	19	50*
1613	1410	" "	" 24, '93	♀	195	100	5 4	21	19	51.3
1615	1412	" "	" 24, '93	♂	177	90	6.8	21	18	50.8
1619	1416	" "	" 25, '93	♂	180	93	5.2	21	18	51.7
1620	1417	" "	" 25, '93	♂	175	87	6.6	21	17.4	49.7
1621	1418	" "	" 25, '93	♂	178	90	5.4	21.4	18	50.6
1630	1427	" "	" 30, '93	♀	217	114	10.8	22	18.8	52.5
1638	1435	" "	Aug. 1, '93	♀	201	105	11	21	17.8	52.2*
1639	1436	" "	" 1, '93	♂	189	100	5	21	17	52.9
1642	1438	" "	" 5, '93	♂	170	83	7.8	20	17	48.8

*Type.

Measurements of One Hundred Specimens of Sitomys americanus canadensis Miller.

Number.		Locality.	Date.	Sex.	Total length.	Tail vertebræ.	Pencil.	Hind foot.	Ear from notch.	Ratio of tail vertebræ to total length.
Skin.	Skull.									
1643	1439	Peterboro, N. Y.	Aug. 5, '92	♂	176	85	8.2	20.2	17	48.3
1644	1440	" "	" 6, '92	♂	171	86	9.2	20.4	18	50.3
1645	1441	" "	" 7, '93	♂	180	96	6.8	21	18	53.3
1651	1447	" "	" 18, '93	♀	202	104	8	20.6	20	51.5
1655	1451	" "	" 22, '93	♀	195	103	8	19	19	52.8
1661	.....	" "	" 23, '93	♂	195	100	8	20	19.8	51.3
1662	1458	" "	" 25, '93	♂	188	101	5.8	21	20	53.2
1670	1465	" "	" 26, '93	♂	214	116	6.2	21.4	18.4	54.2
1671	1466	" "	" 26, '93	♂	202	105	7.4	21	18	52
1672	1467	" "	" 26, '93	♂	189	101	6.9	20	19	53.6
1680	1475	" "	Sept. 7, '93	♀	192	98	5	20.2	18.8	51
1681	1476	" "	" 7, '93	♂	187	92	6.1	22	18	49.2
1685	1480	" "	" 10, '93	♂	192	98	10	21	19.4	51
1686	1481	" "	" 10, '93	♂	183	94	9.4	22	19	51.4
1687	1482	" "	" 10, '93	♂	187	98	6.4	22.8	20	52.4
1688	1483	" "	" 10, '93	♀	183	95	7	21.8	18.4	51.9
1692	1487	" "	" 11, '93	♀	182	95	8.6	21.8	19.8	52.3
1693	1488	" "	" 11, '93	♀	172	87	8	20.2	18	50.6
1697	1491	" "	" 15, '93	♀	182	94	6.8	21	19	51.6
2003	.....	" "	Oct. 14, '93	♂	182	93.6	7.8	21	19	51.9
2004	.....	" "	" 19, '93	♀	173	90	7.4	20.4	18	52
2009	.....	" "	Nov. 3, '93	♂	180	94	8.4	20	17	52.2
2010	.....	" "	" 8, '93	♂	200	102	8.4	20	19	51
2292	.....	Mount Graylock, Mass.	May 8, '93	♀	198	96	7.4	22	19	48.5
2293	.....	" "	" 8, '93	♀	188	94	7	21.2	18	50
2294	.....	" "	" 8, '93	♀	200	103	9	22.2	17	51.5
2295	.....	" "	" 8, '93	♂	202	98	8	22.2	19	48.5